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Dielectronic Satellite Contributions to the He- β Line Profiles of Highly Charged Ions P. BEIERSDORFER, K. WIDMANN, LLNL, A. J. SMITH, *Morehouse College* — We have measured the resonance strengths of the dielectronic satellites of various helium-like ions (Ar^{16+} , Cr^{22+} , Fe^{24+}) in order to assess their effects on the He- β line profiles. The measurements were carried out on the Livermore EBIT facility, and contributions from the $1s2\ell3\ell'$, $1s3\ell3\ell'$, $1s3\ell4\ell'$, $1s3\ell5\ell'$, and $1s3\ell n\ell$ ($n \geq 6$) satellites were determined separately. In the case of Ar^{16+} , we show that the total resonance strength of the $1s3\ell4\ell'$ satellites is equal to and that of the $1s3\ell n\ell$ ($n \geq 5$) satellites is 3x larger than that of the $1s3\ell3\ell'$ satellites. The spectral location of the set of $1s3\ell n\ell$ ($n \geq 5$) satellites is almost coincident with the location of the $1s3p\ ^1P_1 - 1s^2\ ^1S_0$ He- β line. The location of these satellites is thus almost exactly coincident with the location of the central "dip" in the He- β line profile predicted by Stark broadening for the case of imploding ICF capsules. Inclusion of the effects of these satellites in Stark-broadening calculations may lead to a reduction of the predicted dip, similar to the filling achieved by ion dynamic effects or by residual absorption.

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☒ Prefer Oral Session
☐ Prefer Poster Session

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